



MAY/JUNE 2024

Xplor



SPARKS
FLY
IN MISSOURI'S
SUMMER SKY

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Missouri's blinkiest beetles put on the shiniest show of the summer.

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Pull out this poster and tape it to your wall to make your room look wild.
-

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ON THE COVER

Firefly

The top of a rock seems like a weird place for a date, but not if you're an eastern collared lizard. A colorful male turns on the charm to a nearby female by prancing around, bobbing his head, and doing pushups.

STRANGE BUT TRUE

Your guide to all the
UNUSUAL, UNIQUE,
AND **UNBELIEVABLE**
stuff that goes on in nature

Splitting hares: **BLACK-TAILED JACKRABBITS** are born fully furry, with their eyes open, and they can take a few wobbly hops. In contrast, **EASTERN COTTONTAIL** newborns are nearly naked, their eyes are sealed shut, and they can't hop for several days.



BALTIMORE ORIOLES

are caterpillar-catching machines. During nesting season — when birds need lots of protein to lay eggs and feed babies — an oriole may catch up to 17 caterpillars per minute!



Frog fight! Male **GRAY TREEFROGS** fight other males who trespass on their territories. Fights often start with loud, aggressive croaking and — if the intruder doesn't back off — end with shoving, kicking, and head-butting.



Lacking talons, **LOGGERHEAD SHRIKES** often stab their prey onto thorns or barbed wire for easier eating. The “butcher birds” let poisonous meals, like monarch butterflies, stick around for several days to give toxins time to disappear.



BOBCATS have white spots on the backs of their ears. Biologists speculate the spots help kittens follow their mom in dim light. If a kitten falls behind, mom can raise her tail to display even more bright white fur.



NORTHERN ROUGH GREENSNAKES turn blue a few hours after they die. This happens because the yellow pigment in their skin breaks down more quickly than the blue pigment.



A **BUTTERFLY'S** feet don't smell — they taste. Butterflies have flavor-sensitive cells on their toes. When they land on something, they can quickly tell if it's good to eat or yucky.



WHAT IS IT?

DON'T KNOW? Jump to Page 21 to find out.

- 1 My eyes are big, but I am small.
- 2 I usually jump before I crawl.
- 3 I use a rope to catch my fall.
- 4 You might spot me on a wall.



TWO TRUTHS, ONE LIE

— Which —
fascinating fact
is actually a fib?

Answer on Page 21



- 1 To lure predators away from its chicks, a killdeer thrashes around and drags its wing, pretending to have a broken bone.
- 2 To keep cattle from trampling their nests, killdeer ruffle their feathers and charge the hoofed creatures, hoping to startle them.
- 3 For protein during egg-laying, females peck deer and lick the blood that trickles out. The name "killdeer" comes from this practice.

HOW TO

BUILD A BEE HOTEL

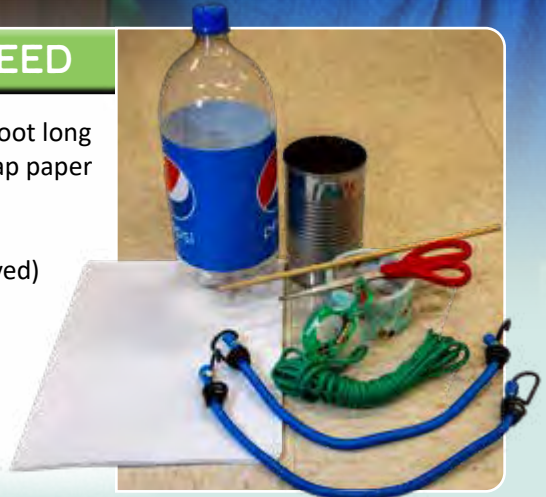
Mason and leafcutter bees help flowers grow. To invite these hardworking flower farmers into your yard, build a bee hotel.

Mama mason and leafcutter bees nest in hollow twigs, abandoned insect burrows, or rolled-up paper tubes. Once mom finds a tube that's the right size, she builds "rooms" out of leaves or mud and lays an egg inside each one. Baby bees hatch out and grow during fall and winter by eating food left by mom. In the spring, the young bees chew out of the rooms and take over the flower-farming business.



HERE'S WHAT YOU NEED

- ¼-inch wooden dowel about 1 foot long
- 40 sheets of 8.5- by 11-inch scrap paper
- Scissors
- Empty 28-ounce aluminum can (washed, dried, and label removed)
- Empty 2-liter soda bottle (One with straight sides works best.)
- Transparent tape
- Duct tape
- Bungee cords or rope





HERE'S WHAT YOU DO

1. Cut the paper in half to make 8.5- by 5.5-inch sheets. Put on some music. You're about to make a lot of tubes.
2. Roll each sheet tightly around the dowel to make 5.5-inch-long tubes (these will become hotel rooms for baby bees). Take care to roll the paper straight so the ends are even. Use small pieces of tape to keep the tube from unrolling and then slide it off the dowel. Repeat until all the sheets are rolled up.
3. Fill the can with tubes until you can't slide in any more. (It will take 75 to 80.) Be careful not to crush the tubes. Make sure the end of each tube is firmly against the bottom of the can.
4. Cut out a rectangle of plastic from the middle of the soda bottle. Wrap the plastic halfway (or more) around the can to make a "roof" so rain doesn't blow inside and soak the tubes. Leave a 3-inch overhang on the front of the can. Use duct tape to secure the roof to the can. Optional: Decorate your bee hotel with craft duct tape or water-resistant paint.
5. Place your bee hotel about 4 or 5 feet off the ground near blooming plants. Use bungee cords or rope to secure the hotel to a fence or deck post so it doesn't move in the wind. The hotel's opening should face south so the morning sun warms up the baby bees.
6. Replace the tubes every summer with new paper tubes. Though it seems easier, avoid using plastic straws or bamboo. They won't allow air to seep inside, which will cause the baby bees to suffocate.



Sparks in the Dark

Forget what the calendar says. When you see the flicker of a firefly's fanny, you know summer has arrived.

Fireflies — also known as lightning bugs — are neither flies nor bugs. They're beetles. The next time you catch one, take a look at its wings. Like all beetles, a firefly's front wings — called elytra (*el-ih-tra*) — are thick and leathery, and they form a straight line where they meet on the back. When a firefly wants to fly, it holds its elytra out of the way and flaps its delicate back wings. When it wants to rest, it folds its elytra over its back wings to protect them.

More than 2,000 kinds of these blinky beetles wink worldwide. They're found on every continent except Antarctica. Over 170 species live in the United States and Canada. About two dozen show up in the Show-Me State, and we may have even more. Some species look alike, and even experts have trouble telling them apart.



Escargot, Anyone?

In late summer, mama fireflies lay dozens of tiny eggs in soggy soil, rotting wood, or under leaf litter. In two or three weeks, the eggs split open and out pop wiggly, wingless larvae that glow in the dark.

The little lightning bugs don't glow to show off. The gleam is a warning to would-be predators that these beetle babies taste bad! If a bird eats one and gets sick, the glow helps it remember not to gulp down anything else that glows.



Glowworms are vicious predators, and their favorite foods are something the French call escargot (*ess-car-go*). You, however, probably call them snails. Glowworms find meals by following slime trails left by snails and slugs. Once they locate a victim, they pounce on top of it and inject venom that turns the snail's insides to mush. Then the glowworm happily slurps up the goo like a snail-flavored shake.

As you can see, not every part of a firefly's life sparkles.

Big Changes

Glowworms spend winter underground. Some species live for a year or longer as larvae. Others turn into adults when it warms up the following spring.

When a larva is ready to grow up, it digs a tiny chamber in the dirt or hangs upside down from a twig. Inside its body, glowworm body parts are broken down, rearranged, and put back together as shiny new adult body parts. About 10 days later, the metamorphosis is complete, and an adult firefly emerges.



You Glow, Girl!

The last two or three segments of a firefly's abdomen — you might call it its behind — contain an organ called a lantern. Chemicals mix together inside the lantern to create light.

A firefly turns the light on and off with oxygen. When oxygen is added, the lantern blinks on. When oxygen is taken away, the lantern blinks off.

If you've ever touched a lit lightbulb, you know it gets hot. *Ouch!* But a firefly's flashing fanny doesn't make hardly any heat. This is for the best. If its behind got as hot as a lightbulb, a firefly would quickly turn into a crispy critter!

Different firefly species glow in different colors. Those that are active at sunset often glow yellow. Those that come out late at night tend to glow green. Some species even glow reddish-orange.



Lantern



Love Songs with Light

Fireflies use their light to talk to each other. And what they talk about on those warm summer evenings is romance. When a male flutters around in the dark, his twinkling tush acts like a neon sign. "Here I am," it blinks. "Do you like me?"

Female fireflies don't usually fly. Instead, they hide in the grass or perch on low-growing plants. When a female spots a male she likes, she blinks back. "Hey fella," she blinks. "I fancy the way you're flickering."

This flashy chat can last for more than an hour until the lovesick male finally zeroes in on his soon-to-be girlfriend.

Dinner Date

Since different kinds of fireflies often live in the same place, males and females need a way to single out their own kind. That's why each species lights up in its own special way. Some species blink slowly. Others blink quickly. Some blink in a pattern: twice in a row or three times. Big dipper fireflies, a common Missouri species, light up for a solid half second while flying in the shape of a "J."

A few kinds of female fireflies imitate the flash pattern of other species. When a male shows up hoping for love, the female *liar-fly* grabs him and eats him for supper. Sometimes, love hurts.



Lights Out?

Biologists worry that some kinds of fireflies might soon blink off forever. In the U.S., one out of every three species may be at risk for going extinct. Here's what you can do to keep the light show alive.

Let the grass grow.

Allow parts of your lawn to grow tall and give your rake a break. Tall grass and leaf litter keeps the soil soggy, which makes better habitat for baby fireflies.

Turn off lights.

Bright lights make it hard for fireflies to see each other twinkle. Turn on outdoor lights only when you need them and keep curtains closed in your house at night.

Avoid pesticides.

Most pesticides are deadly to beetles, including fireflies. Pesticides also kill snails and worms that baby fireflies eat. Ask your parents to avoid using them.

Help track fireflies.

Biologists want to learn more about which kinds of fireflies live where. You can help by joining the Firefly Atlas effort at fireflyatlas.org.

RAINBOW DARTER



The image features two rainbow darters in a stream. The foreground fish is a male in breeding colors, showing bright yellow, orange, and iridescent blue and green patterns. It has a large, prominent eye. The background fish is a female, appearing much more drab with brown and greyish-green patterns. The stream bed is rocky, and the water is clear.

HIDING IN PLAIN SIGHT

Females sport brown blotches to help them disappear against a gravelly stream bottom. When it isn't mating season, males look drab, too.

BOTTOM DWELLER

Rainbow darters live in the rocky riffles of swift-flowing streams. They hug the bottom to avoid being swept away.

SWIM OR SINK

Unlike most fish, darters lack a swim bladder, an organ that helps fish float up or down. When a darter stops swimming, it sinks.



FLASHY FELLAS

During mating season, male rainbow darters sport dazzling colors to impress a girlfriend.

DART AROUND

Darters swim from place to place in a series of short, quick dashes. That's why they're named "darters."

WATER WINGS

Water flowing over their large, winglike pectoral fins helps press darters down against the bottom of a stream.

ANIMAL SUPERPOWERS

Animals have adaptations to help them catch food, avoid being eaten, and survive nature's unforgiving environments.

TURBO DOG
VS.
STINK BOMB

They don't have superpowers, but if they did ...



Hmm. Could that be breakfast I see?



Missouri's fastest land animal can sprint at speeds up to 45 miles per hour.

In the blink of an eye, the coyote closes the distance.

MEANWHILE ...

Unaware of the approaching danger, a striped skunk digs up a hornet's nest.



Thick fur protects the skunk as it smashes and eats the angry insects.



What?! Who's there?



Gotta get serious!



My, don't you look delicious?



Back off! I'm warning you!

I'm coming for you, Stripey.



Don't make me do it!



PFFFFFFF!

HOWWWWWL!

Unfortunately, the coyote doesn't heed the warning.



COUGH! GAG!



Now, back to breakfast.

A skunk can aim its stinky, eye-searing spray with pinpoint precision.

LATER THAT DAY,
IN A HABITAT NEARBY...

MR. WHISKERS VS. AQUAMAMMAL



This wiggly critter has a superpower.



In a few weeks she will change from a water-breathing tadpole to an air-breathing bullfrog.

If she lives that long ...



As she swims, the mucus on her skin leaves a trail of scent in the murky water.



Hmmm. What have we here?



Every inch of a catfish's skin, from its whiskery barbels to the tip of its tail, is covered with taste buds.



Mmmmm. Lunch!




But its skin isn't made to savor flavors ...



It's made to find food in dark, murky water.






What was that?


WHOOOSH!

In a surprising turn of events, the predator becomes prey.



Curses! Looks like my lunch is over!


With a torpedo-shaped body and webbed paws, a river otter can swim faster than many fish.



KER-SPLASH!




Huh?!




An osprey can bend its outer toes backward to get a better grip on slippery fish. Pretty *talon*-ted, huh?

LATER THAT NIGHT,
IN A HABITAT NEARBY...

SILENT SWOOPER AND THE BUG ZAPPER



When the sun goes down, a hungry barn owl wakes up.




In the gathering darkness, the owl's keen eyes are no longer an asset.



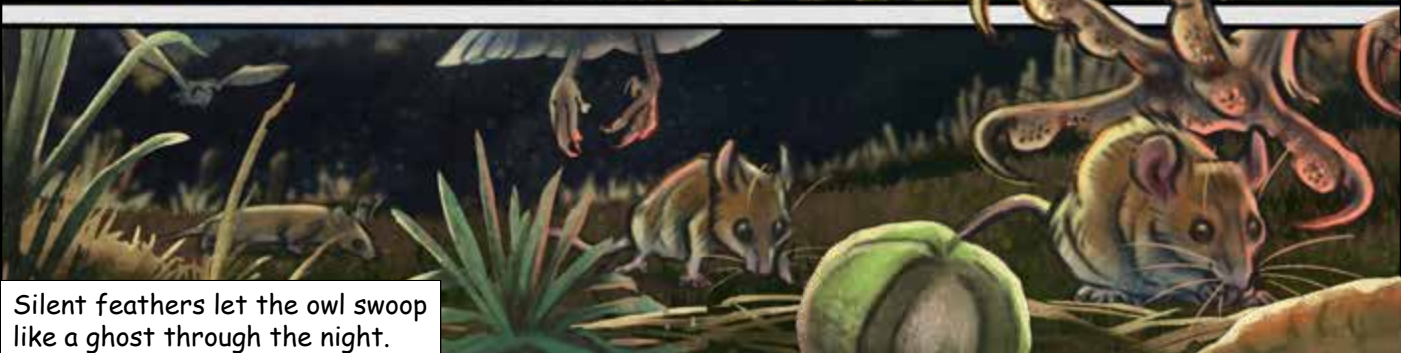
Hoo's there?

Hidden beneath feathers on its saucer-shaped face, super-sensitive ears are the owl's secret weapon.



Even when it's pitch black, the hungry hunter has no trouble pinpointing prey.



SKITTER SKITTER SKITTER




Silent feathers let the owl swoop like a ghost through the night.



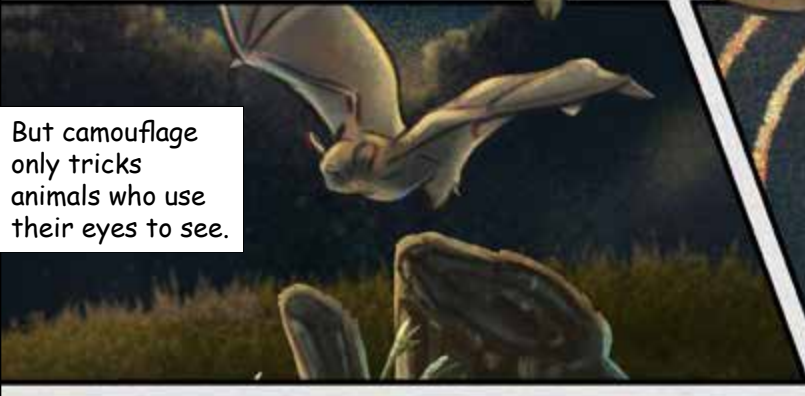
Gotcha!
Supper is
served.




Safe at last.
Time to split!



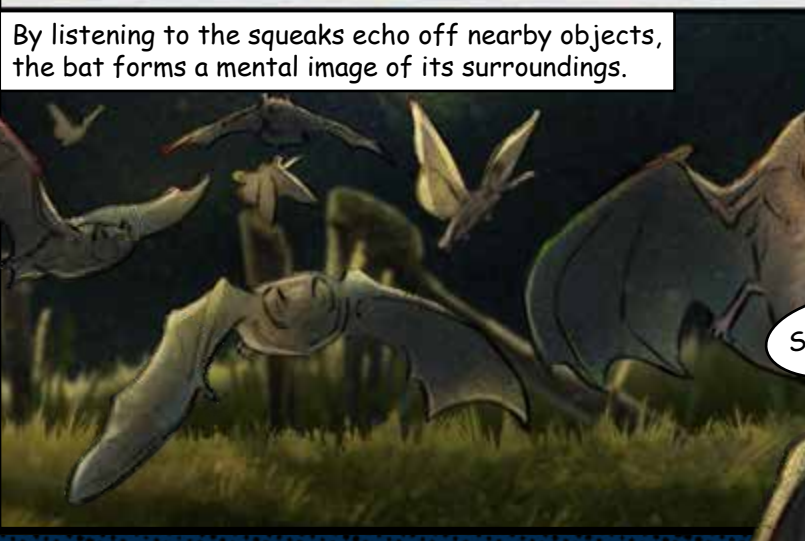
A sphinx moth relies on camouflage, like a cloak of invisibility, to hide from keen-eyed predators.




But camouflage only tricks animals who use their eyes to see.



A big brown bat emits high-pitched squeaks.



By listening to the squeaks echo off nearby objects, the bat forms a mental image of its surroundings.



Success!

XPLOR MORE

MAMA MAMMAL MATH

Some mama mammals make many babies. They give birth to multiple litters throughout the year, and each litter may contain lots of little ones. A meadow vole was recorded to have 13 litters, totaling 78 babies, in one year. *Whew!* Other mammal moms have far fewer offspring. A gray bat has only one pup each year. For many mammals, the number of babies in a litter can vary. Chipmunks may have one to eight babies each time they give birth, but on average, they have four or five. (For this puzzle, each mom's litter size does not change.)

INSTRUCTIONS

Can you solve the math puzzles to figure out how many babies each mama mammal has in a typical litter? The first puzzle has been solved for you.

YOU DO THE MATH

$$\begin{array}{c} \text{Donkey} \\ 5 \end{array} + \begin{array}{c} \text{Donkey} \\ 5 \end{array} + \begin{array}{c} \text{Donkey} \\ 5 \end{array} = \underline{15}$$

$$\begin{array}{c} \text{Donkey} \\ \end{array} + \begin{array}{c} \text{Donkey} \\ \end{array} - \begin{array}{c} \text{Wolf} \\ \end{array} = \underline{7}$$

$$\begin{array}{c} \text{Donkey} \\ \end{array} + \begin{array}{c} \text{Wolf} \\ \end{array} + \begin{array}{c} \text{Squirrel} \\ \end{array} = \underline{16}$$

$$\begin{array}{c} \text{Rabbit} \\ \end{array} - \begin{array}{c} \text{Donkey} \\ \end{array} - \begin{array}{c} \text{Wolf} \\ \end{array} = \underline{1}$$

$$\begin{array}{c} \text{Squirrel} \\ \end{array} - \begin{array}{c} \text{Chipmunk} \\ \end{array} + \begin{array}{c} \text{Rabbit} \\ \end{array} = \underline{10}$$

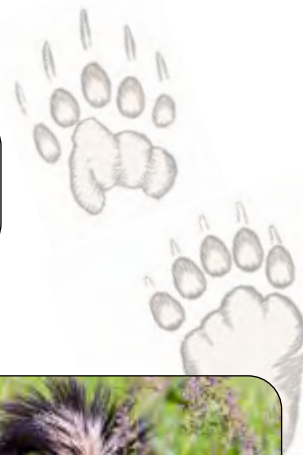
$$\begin{array}{c} \text{Chipmunk} \\ \end{array} + \begin{array}{c} \text{Chipmunk} \\ \end{array} - \begin{array}{c} \text{Squirrel} \\ \end{array} = \underline{4}$$

$$\begin{array}{c} \text{Chipmunk} \\ \end{array} - \begin{array}{c} \text{Wolf} \\ \end{array} + \begin{array}{c} \text{Chipmunk} \\ \end{array} = \underline{9}$$

$$\begin{array}{c} \text{Bat} \\ \end{array} + \begin{array}{c} \text{Bat} \\ \end{array} + \begin{array}{c} \text{Bear} \\ \end{array} = \underline{4}$$

How Many Babies?

Fill in the blanks with how many babies each mama mammal has in a typical litter. Then, multiply by the number of litters to learn how many total babies each mom might make in a year.



EASTERN COTTONTAIL



STRIPED SKUNK



$$5 \times 8 \text{ LITERS PER YEAR} =$$

× 1 LITTER PER YEAR =

× 1 LITTER PER YEAR =

VIRGINIA OPOSSUM



RED FOX



× **2 LITERS**
PER YEAR =

× 3 LITERS
PER YEAR =

× 1 LITTER PER YEAR =

**SOUTHERN
FLYING
SQUIRREL**



LITTLE BROWN BAT



BLACK BEAR



× 2 LITERS
PER YEAR =

× 1 LITTER PER YEAR =

× 1 LITTER PER YEAR =

Get Out!



FUN THINGS TO DO AND GREAT PLACES TO DISCOVER NATURE



In May, **BABY OPOSSUMS** crawl out of their mom's pouch. But the pouch potatoes can't survive on their own just yet. Look for the youngsters riding on mom's back while she forages for food.



Hooray for **NATIONAL PRAIRIE DAY!** Celebrate on Saturday, June 1 by exploring one of Missouri's glorious grasslands. To find a prairie, visit mdc.mo.gov/atlas and enter "prairie" in the search box or visit moprairie.org/where-we-work.

EASTERN WHIP-POOR-WILLS

are so well-camouflaged they're nearly invisible. But the big-mouthed birds are easy to hear. Visit the woods at dusk in May. Once the sun sinks, whip-poor-wills start chanting their names — and keep going for hours.



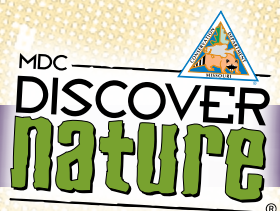
In late May, male bluegills fan out saucer-shaped nests in shallow water along the edges of lakes and ponds. **CAST A JIG** away from shore and reel it in slowly. In no time, you'll feel a sharp tug from an angry bluegill defending his nest.



PRICKLY PEAR — Missouri's only native cactus — unfurls its stunning yellow-and-orange flowers in mid-June. Look for it scattered nearly statewide on glades, bluffs, and rocky roadsides.



Looking for more ways to have fun outside? Find out about Discover Nature programs in your area at mdc.mo.gov/events.



WHAT
IS
IT?

FROM PAGE 3 —



BOLD JUMPING SPIDER

Missouri has over 40 kinds of jumping spiders. Most aren't much bigger than a flake of oatmeal. A huge, central pair of eyes gives a jumper better vision than other animals that small. Jumping spiders don't weave webs. Instead, they crawl close to prey and then — *SPROING!* — pounce on top of it. Before leaping, a jumper secures a strand of silk to its launch site. If it falls, it climbs up the silk to safety.

GO FIND IT!



Cut out this critter card and take it with you outside.
How many of the things on the card can you find?

RUBY-THROATED HUMMINGBIRD



FAST FLAPPER

Hummingbirds flap their wings about 50 times a second. This makes a loud hum and helps a hummer hover like a tiny helicopter.

SUGAR RUSH

To keep their wings revved up, hummers must eat two or three times their weight in sugary nectar every day.

TOTALLY TUBULAR

To reach deep inside tube-shaped flowers like columbine and trumpet creeper, hummers have long beaks and tongues.

FLYING GEMSTONES

Grown-up males have a throat patch that sparkles like rubies in bright sunlight but looks black in the shadows.

KNITTING A NEST

Mama hummers build tiny, cup-shaped nests. They line them with dandelion fluff and attach them to branches with spider silk.

ONE
LIE

FROM PAGE 3 — Answer: 3

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or update your address, visit

mdc.mo.gov/xplor.

FREE TO MISSOURI HOUSEHOLDS

GO FIND IT!

Ruby-throated hummingbirds are found throughout Missouri from April to October. They nest in backyards and forests. For more on this tiny but feisty bird, go to mdc.mo.gov/field-guide.

RUBY-THROATED HUMMINGBIRD

